

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>		1. CONTRACT ID CODE 07	PAGE OF PAGES 1   16	
2. AMENDMENT/MODIFICATION NO. 51	3. EFFECTIVE DATE June 1,2006	4. REQUISITION/PURCHASE REQ. NO. 4200160326	5. PROJECT NO. (If applicable)	
6. ISSUED BY Procurement Office George C. Marshall Space Flight Center National Aeronautics and Space Administration Marshall Space Flight Center, AL 35812	CODE PS22E/MCE	7. ADMINISTERED BY (If other than Item 6) Procurement Office/PS22E George C. Marshall Space Flight Center National Aeronautics and Space Administration Marshall Space Flight Center, AL 35812 Lizette.M.Kummer@NASA.gov/256-544-3457		CODE PS22E/MCE
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State, and Zip Code)  COLSA Corporation 6726 Odyssey Drive Huntsville, AL 35802 Attn: Pat Hodges .		(v)	9A. AMENDMENT OF SOLICITATION NO.	
			9B. DATED (SEE ITEM 11)	
		X	10A. MODIFICATION OF CONTRACT/ORDER NO. NNM04AA07C	
			10B. DATED (SEE ITEM 13) December 4, 2003	
Code 4U825	FACILITY CODE 128960			

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning \_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

**12. ACCOUNTING AND APPROPRIATION DATA (If required)**

See page 2

**13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: FAR 52. 243-2 Changes Cost Reimbursement (AUG 1987) Alt I (APR 1984), FAR 43.103(a) and FAR 52.232-22 Limitation of Funds clause
	D. OTHER (Specify type of modification and authority)

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return 3 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
	Negotiated Est. Cost	Maximum Award Fee	Unearned Award Fee	Maximum Incentive Fee	Unearned Incentive Fee	Contract Value	Total Sum Allotted
Previous	\$ 65,967,188	\$ 2,654,629	(\$ 68,829)	\$ 1,429,417	(\$ 42,295)	\$ 69,940,110	\$ 59,281,887
This Mod	<u>1,289,657</u>	<u>3,591</u>	<u>-0-</u>	<u>1,934</u>	<u>-0-</u>	<u>1,295,182</u>	<u>1,734,052</u>
New Total	\$ 67,256,845	\$ 2,658,220	(\$ 68,829)	\$ 1,431,351	(\$ 42,295)	\$ 71,235,292	\$ 61,015,939

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Cynthia B. Hollingsworth Contracting Officer	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY <u>Original Signed by</u> (Signature of Contracting Officer)	June 1,2006

Continuation of Block 12 Accounting and Appropriation Data  
 and Block 4 Requisition/Purchase Requisition No.

Requisition	WBS Element	
4200160326	706801.02.99.01.08	\$1,734,052
<b>Total</b>		\$1,734,052

1. This purpose of this modification is to add the Systems Integration Node for Secure Data Storage/ISS Backup Control Center (BCC) effort to the existing performance work statement and to implement the negotiated equitable adjustment and funding therefore.

2. A breakout of the negotiated cost and fee adjustments for performance of the Systems Integration Node for Secure Data Storage/ISS Backup Control Center (BCC) effort Architecture Team Activity effort is shown below. Changes to existing values are depicted in italics:

	<u>Basic CY06</u>	<u>Option I</u>	<u>Total</u>
Estimated Cost	\$ 1,289,657	\$ 433,553	\$ 1,732,210
Fee	<u>5,525</u>	<u>5,317</u>	<u>10,842</u>
Total	\$ 1,295,182	\$ 438,870	\$ 1,734,052

<u>Basic Period</u>	<u>Estimated Cost</u>	<u>Maximum Award Fee</u>	<u>Maximum Incentive Fee</u>	<u>Total Minus Unearned Fees</u>
Previous	\$ 65,967,188	\$2,654,629	\$ 1,429,417	\$ 69,940,110
This Mod	<u>1,289,657</u>	<u>3,591</u>	<u>1,934</u>	<u>1,295,182</u>
New Amt	67,256,845	\$2,658,220	\$1,431,351	\$ 71,235,292

<u>Option 1</u>	<u>Estimated Cost</u>	<u>Maximum Award Fee</u>	<u>Maximum Incentive Fee</u>	<u>Total Minus Unearned Fees</u>
Previous	\$ 20,701,253	\$ 827,624	\$ 445,644	\$ 21,974,521
This Mod	<u>433,553</u>	<u>3,456</u>	<u>1,861</u>	<u>438,870</u>
New Amt	\$ 21,134,806	\$831,080	\$ 447,505	\$ 22,413,391

Evaluation Period		Award			Incentive		
		Previous	Mod 51	New Amt	Previous	Mod 51	New Amt
01/01/04-06/30/04	1	\$485,012	-0-	\$485,012	\$208,928	-0-	\$208,928
07/01/04-12/01/04	2	\$480,581	-0-	\$480,581	\$269,221	-0-	\$269,221
01/01/05-06/30/05	3	\$429,446	-0-	\$429,446	\$241,686	-0-	\$241,686
07/01/05-12/31/05	4	\$419,599	-0-	\$419,599	\$236,384	-0-	\$236,384
01/01/06-06/30/06	5	\$421,631	1795	\$423,426	\$237,480	967	\$238,447
07/01/06-12/31/06	6	\$418,360	1796	\$420,156	\$235,718	967	\$236,685
01/01/07-06/30/07	7	\$413,812	1728	\$415,540	\$222,822	931	\$223,753
07/01/07-12/31/07	8	\$413,812	1728	\$415,540	\$222,822	930	\$223,752
1/01/08-06/30/08	9	\$417,914	-0-	\$417,914	\$225,031	-0-	\$225,031
07/01/08-12/31/08	10	<u>\$417,913</u>	<u>-0-</u>	<u>\$417,913</u>	<u>\$225,030</u>	<u>-0-</u>	<u>\$225,030</u>
		\$4,318,080	\$7047	\$4,325,127	\$2,325,122	\$3795	\$2,328,917

3. Additionally, this modification revises Clause B.6, Contract Funding, to provide an additional \$1,734,052 of incremental funding pursuant to the Limitation of Funds clause FAR 52.232-22. The estimated funding coverage date remains unchanged as July 31, 2006.

4. Section 508 is applicable to the following requirements anticipated for this acquisition: The contractor shall comply with all technical standards of 1194.21, 1194.23, 1194.25, 1194.26, 1194.31 and 1194.41 as outlined in url: <https://www.section508.gov/index.cfm?FuseAction=Content&ID=12> with the following exceptions:

Monitor 17 inch HP 7540 -the contractor shall comply with all technical standards of 1194.21 with the exception of 1194.21(l), 1194.23(k1 through k4) with the exception of 1194.23(k3), 1194.26 with the exception of 1194.26(c), 1194.31, 1194.41 with the exception of 1194.41 (c)

HP Compaq Business Notebook NX9600, 1194.21, 1194.23 (k1 though k4), 1194.26, 1194.31 1194.41 with the exception of 1194.41(b)

HP Deskjet 6540 -1194.21 with the exception of 1194.21 (j) and (l), 1194.25 (a, g, and i only), 1194.31 with the exception of 1194.31(d), 1194.41

ProLiant ML370 -1194.21, 1194.23(k1 through k4), 1194.26 (a and d only), 1194.31, 1194.41 with the exception of 1194.41(c)

These exceptions have been determined to be commercially non available or not applicable, by their very nature they can not be made compliant and there is no other commercially available tool that would be totally compliant.

5. To effect the foregoing, the contract is hereby changed in the following particulars:

(i) Clause B.2 ESTIMATED COST, AWARD FEE AND PERFORMANCE INCENTIVE FEE

Paragraph (a) The Estimated Cost of this contract is hereby increased by \$ 1,289,657 (from \$ 65,967,188 to \$ 67,256,845). The Maximum Award Fee is increased by \$3,591 (from \$ 2,654,629 to \$ 2,658,220), and the Maximum Performance Incentive Fee is increased by \$ 1,934 (from \$ 1,429,417 to \$ 1,431,351).

(ii) Paragraph (c) The Estimated Cost for Option Period 1 is hereby increased by \$433,553 (from \$20,701,253 to \$21,134,806). Maximum Award Fee is hereby increased by \$3,456 (from \$827,624 to \$831,080). Maximum Performance Incentive Fee is hereby increased by \$1,861 (from \$445,644 to \$447,505).

(iii) Clause B.6 Contract Funding is hereby revised to increase Estimated Cost by \$ 1,723,210 (from \$ 55,926,309 to \$ 57,649,510). Award Fee is hereby increased by \$ 7047 (from \$ 2,181,125 to \$ 2,188,172), and Performance Incentive Fee is hereby increased by \$ 3,795 (from \$ 1,174,453 to \$ 1,178,248).

(iv) Attachment J-1, Performance Work Statement (PWS), is hereby revised to include the PWS for the Systems Integration Node for Secure Data Storage/ISS Backup Control Center (BCC) effort as WBS 4.7.5 Systems Integration Node for Secure Data Storage/ISS Backup Control Center (BCC) and the 508 requirements of the preceding paragraph 4.

(v) Part III List of Documents, Exhibits and Other Attachments Section J – List of Attachments is hereby revised to reflect the page changes to the PWS as previously described.

6. Therefore, the contract is changed in the following particulars: Clause B.2, Estimated Cost, Award Fee and Performance Incentive Fee, is hereby deleted in its entirety and the revised clause B.2, shown on enclosed replacement pages B-1 through B-2A, is substituted in lieu thereof. Clause B.6, Contract Funding (NFS 1852.232-81) (Jun 1990), is hereby deleted in its entirety and the revised Clause B.6 shown on enclosed replacement page B-5 is substituted in lieu thereof. Attachment J-1 Performance Work Statement pages J-1-31 and J-1-32 are hereby deleted in their entirety and the replacement pages J-1-31 through J-1-36 are substituted in lieu thereof. Part III List of Documents, Exhibits and Other Attachments, Section J – List of Attachments, is hereby deleted in its entirety and the revised Section J-List of Attachments, replacement page J-1 is substituted in lieu thereof.

7. In order to implement the contract changes resulting from this modification, the page (s) listed below is added or deleted from the contract as shown. In order to indicate the specific area(s) of change, vertical lines are shown in the right margin of the enclosed replacement page(s) across from the revised area(s).

<u>UCF Section</u>	<u>Pages Added</u>	<u>Pages Deleted</u>
B, Supplies or Services and Prices/Costs	B-1, B-2, B-2A B-5	B-1, B-2, B-2A B-5
List of Attachments	J-1	J-1
Attachment J-1, Performance Work Statement	J-1-31 through J-1-36	J-31, J-32

Contractor's Statement of Release

In consideration of the modification agreed to herein as complete equitable adjustment for the contractor's proposal for adjustment listed below, the contractor hereby releases the Government from any and all liability under this contract for further equitable adjustment attributable to such facts or circumstances giving rise to said contract changes and/or contractor proposals, and for such additional obligations as may be required by this modification.

Contract Change Identification  
Modification No. 51

Proposal Number  
COLSA No. 06-05-93 dtd May 10, 2006

## PART I - THE SCHEDULE

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### SECTION B - SUPPLIES OR SERVICES AND PRICE/COSTS

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#### **B.1 Supplies And/Or Services To Be Furnished**

(a) In a manner consistent with the Marshall Space Flight Center (MSFC) values, the Contractor shall provide all resources (except as may be expressly stated in this contract as furnished by the Government) necessary for performing the "Huntsville Operations Support Center (HOSC)" in accordance with the Performance Work Statement, Attachment J-1.

(b) This is a cost-reimbursement contract with both award fee and performance incentive fee criteria (CPAF/IF). The award fee (subjective evaluation) and performance incentive fee (objective evaluation) will be assessed in accordance with the Fee Evaluation Plan (FEP), Attachment J-7.

(c) A portion of this contract is under an Indefinite Delivery/Indefinite Quantity (IDIQ) arrangement, which will also be on a CPAF/IF basis. The purpose of this provision is to allow the Government to acquire indefinite services as addressed in the Performance Work Statement, Attachment J-1, Paragraphs 3.0 and 4.0. IDIQ requirements cannot be adequately defined for inclusion in the contract because the precise quantities that will be required during the contract period of performance cannot be predetermined. IDIQ will be ordered in accordance with Clause B.7- Task Ordering Procedure and Clause B.8- IDIQ Schedule of Rates. The guaranteed minimum quantity of work that will be ordered under the IDIQ portion of this contract shall be \$50,000 per year. The maximum not-to-exceed (NTE) amount of IDIQ work per contract year is \$3,000,000 per contract year.

(End of Clause)

#### **B.2 Estimated Cost, Award Fee And Performance Incentive Fee**

(a) The estimated cost of this contract is \$67,256,845. The maximum award fee is \$2,658,220. The maximum performance incentive fee is \$1,431,351. The estimated cost plus maximum award fee and maximum performance incentive fee minus the unearned award fee and unearned performance incentive fee is \$71,235,292.

(b) A breakout of estimated cost, maximum award fee, unearned award fee, maximum performance incentive fee, unearned performance incentive fee, and the total minus unearned fee for the base contract period is shown below:

<u>Period Covered</u>	<u>Estimated Cost</u>	<u>Maximum Award Fee</u>	<u>Unearned Award Fee</u>	<u>Max. Perf. Incentive Fee</u>	<u>Unearned Performance Incentive Fee</u>	<u>Total Minus Unearned Fees</u>
1/1/04 - 12/31/06	\$67,256,845	\$2,658,220	(\$68,829)	\$1,431,351	(\$42,295)	\$71,235,292

(c) A breakout of estimated cost, maximum award fee, unearned award fee, maximum performance incentive fee, unearned performance incentive fee, and the total minus unearned fee is shown below for Option 1 and Option 2:

<u>Period Covered</u>	<u>Estimated Cost</u>	<u>Maximum Award Fee</u>	<u>Unearned Award Fee</u>	<u>Max. Perf. Incentive Fee</u>	<u>Unearned Perf. Incentive Fee</u>	<u>Total Minus Unearned Fees</u>
Option 1 (1/1/07 – 12/31/07)	\$21,134,806	\$831,080	TBD	\$447,505	TBD	\$22,413,391
Option 2 (1/1/08 – 12/31/08)	\$20,861,538	\$835,827	TBD	\$450,061	TBD	\$22,147,426

(d) The maximum award fee and maximum performance incentive fee for each of the contract periods specified above is hereby divided and allocated into individual six month evaluation periods during contract performance in order to calculate award and performance incentive fee earned.

<u>Evaluation Period</u>		<u>Maximum Award Fee</u>	<u>Maximum Incentive</u>
01/01/04-06/30/04	1	\$485,012	\$208,928
07/01/04-12/01/04	2	\$480,581	\$269,221
01/01/05-06/30/05	3	\$429,446	\$241,686
07/01/05-12/31/05	4	\$419,599	\$236,384
01/01/06-06/30/06	5	\$423,426	\$238,447
07/01/06-12/31/06	6	\$420,156	\$236,685
01/01/07-06/30/07	7	\$415,540	\$223,753
07/01/07-12/31/07	8	\$415,540	\$223,752
1/01/08-06/30/08	9	\$417,914	\$225,031
07/01/08-12/31/08	10	<u>\$417,913</u>	<u>\$225,030</u>
		\$4,325,127	§ \$2,328,917

(e) The amount of award fee which has been earned/unearned pursuant to this clause and the period to which said fee applies is set forth below:

<u>Award Fee Period</u>	<u>Amount Earned</u>	<u>Amount Unearned</u>
January 1 - June 30, 2004	\$ 456,881	\$ 28,131
July 1 - December 31, 2004	\$ 454,149	\$ 26,432
January 1 - June 30, 2005	<u>\$ 420,299</u>	<u>\$ 9,147</u>
Total	\$1,331,329	\$63,710

(f) The amount of performance incentive fee which has been earned/unearned pursuant to this clause and the period to which said fee applies is set forth below:

<u>Incentive Fee Period</u>	<u>Amount Earned</u>	<u>Amount Unearned</u>
January 1 - June 30, 2004	\$ 208,928	\$-0-
July 1 - December 31, 2004	\$ 269,221	\$-0-
January 1 - June 30, 2005	<u>\$ 199,391</u>	<u>\$ 42,295</u>
Total	\$ 677,540	\$ 42,295

(End of Clause)

**B.3 Award Fee For Service Contracts (NFS 1852.216-76)(June 2000)**

**B.5 Premiums For Scheduled Overtime (MSFC 52.222-90) (Feb 2001)**

Pursuant to the clause entitled "Payment for Overtime Premiums," the amount of overtime premium authorized shall not exceed the amount specified below for the indicated period.

<u>Period</u>	<u>Amount</u>
(b)(4)	

(End of Clause)

**B.6 Contract Funding (NFS 1852.232-81) (Jun 1990)**

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is \$ 57,649,510. This allotment is for Huntsville Operations Space Center (HOSC) Mission Support Services and covers the following estimated period of performance: January 1, 2004 through July 31, 2006.

(b) An additional amount of \$ 3,366,420 is obligated under this contract for payment of fees.

(c) Recapitulation of funding is as follows:

	Previous	This Action	Total
Estimated Cost	\$ 55,926,309	\$ 1,723,210	\$ 57,649,510
Award Fee	2,181,125	7,047	2,188,172
Performance Incentive Fee	<u>1,174,453</u>	<u>3,795</u>	<u>1,178,248</u>
Total Sum Allotted	\$ 59,281,887	\$ 1,734,052	\$ 61,015,939

(End of Clause)

**B.7 Task Ordering Procedure (NFS 1852.216-80) (Oct 1996)**

(a) Only the Contracting Officer may issue task orders to the Contractor, providing specific authorization or direction to perform work within the scope of the contract and as specified in the schedule. The Contractor may incur costs under this contract in performance of task orders and task order modifications issued in accordance with this clause. No other costs are authorized unless otherwise specified in the contract or expressly authorized by the Contracting Officer.

**PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS**

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**SECTION J - LIST OF ATTACHMENTS**

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<u>Attachments</u>	<u>Title</u>	<u>Pages</u>
J-1	Performance Work Statement	36
J-2	Data Procurement Document	41
J-3	Applicable Regulations and Procedures	3
J-4	Acronyms and Abbreviations	11
J-5	Government Furnished Property	74
J-6	Work Breakdown Structure	2
J-7	Fee Evaluation Plans	6
J-8	Installation-Provided Property and Services	2
J-9	Performance Work Statement for IDIQ Task Order	1
J-10	SCA Wage Determination	10
J-11	Marshall Values	1
J-12	MOVE HQ Support Statement of Work	3

#### 4.7.5 Systems Integration Node for Secure Data Storage/ISS Backup Control Center

Tasks include development, fabrication, installation, acceptance testing and initial operations support needed to establish mission essential capabilities prior to the threat of possible hurricane impact to operations of the MCC-H. In addition, tasks are defined to provide sustaining engineering and operations support on an 'on call' basis to JSC engineering and flight operations team subsequent to establishing a BCC operational capability. Ongoing support will be required to support monthly test and exercise/simulation of the BCC to maintain readiness to assume operational control of the ISS immediately upon activation.

JSC will be responsible for the maintenance, operation, and life cycle replacement of the support equipment required by the BCC at MSFC. A unique requirement of the MSFC BCC is installation of an encryption device to provide command security. This equipment will be located in Building 4207 with both hardware and encryption key administration provided by the current contractor (ODIN, Unites, etc.).

##### Guidelines and Requirements

The contractor will design the BCC based on the requirements document. The requirements will be verified as described in Appendix B (Requirements Verification Matrix. Acceptable methods of verification are defined as follows:

Demonstration (D): The operation of the BCC, or the part of the BCC that relies on the observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis.

Test (T): The operation of the BCC, or the part of the BCC using instrumentation or special test equipment to collect data for later or real time analysis.

Analysis (A): The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results.

Inspection (I): The visual examination of the BCC hardware, software, documentation, etc.

Special method (S): Any special verification methods for the BCC, such as special tools, techniques, procedures and/or facilities.

##### Implementation Planning, Installation and Acceptance Testing

The implementation planning and installation of the BCC will begin upon receipt of a negotiated contract modification and accepted Statement of Work. Acceptance testing will begin upon the successful completion of the Implementation Planning and Installation phases.

Certification of Flight Readiness (CoFR) will begin upon successful completion of the acceptance testing.

##### Implementation Planning Phase

During the Implementation Planning phase, the contractor will gather site-specific requirements, complete site surveys and develop detailed, site-specific installation plans

and procedures. Satisfactory completion of this phase will require agreement between the contractor, the Contract Officer and both JSC and MSFC site/facility management to provide assured access, approval of voice, command, telemetry and data connectivity and implementation, and satisfaction of security requirements. During this phase the contractor shall participate in monthly Management Review meetings with the ISS (BCC Activation Team) BAT to monitor technical, cost and schedule status and resolve issues on a timely basis.

While operator training and certification is not a responsibility assigned to the contractor, it is essential that the contractor coordinate BCC facility readiness with operator readiness through the BAT to ensure full operational capability is attained.

The contractor shall conduct a single Design Review (DR) of the BCC. The objectives of the Design Review are to:

Ensure the BCC design meets all requirements

Ensure the BCC design is compatible with the existing architecture of all affected facilities

Ensure that BCC interfaces to the Customer Premise Equipment are completely and consistently defined, and all Interface Control Documents (ICD) required to implement the BCC are identified

Determine that the BCC design is adequate to meet the mission objectives of the ISS Program, and verify the readiness of all BCC participants' personnel, facilities and management to begin installation

Identify installation and test procedures required from project initiation to capability acceptance are identified and, if not available, are scheduled for development, coordination and approval to meet BCC project need dates.

#### Implementation Planning Special Requirement

If it is decided that full implementation of the BCC requires full OCA functionality, the contractor will coordinate with JSC MCC-H facility engineering and mission control personnel to install and operation a forward Ku Front End Processor (FEP) at MSFC. This installation will be incorporated into MSFC's facility and connectivity architecture to ensure all operational capability and security protection requirements are met.

#### Installation Phase

Upon completion of the Implementation Planning phase, including DR Review Item Discrepancy (RID) closures, the Installation Phase will begin. The Installation Phase comprises procurement and installation of the equipment required to establish the BCC.

The Installation Phase ends when the BCC hardware, software and initial operator readiness is evaluated as adequate to initiate Acceptance Testing.

#### Acceptance Testing

Upon completion of the Installation Phase, the contractor shall conduct an Acceptance Test which shall include but not be limited to the following:

- Core and Payload Command generation and response monitoring and verification.
- Receipt of S-Band and KuBand data verified against known entries
- Functionality of encryption equipment
- Validation of user displays and their values
- Orbiter Communication Adapter functionality
- Validation of Planning System
- Audio communication path to ISS and all ground facilities required to support on-orbit operations.

If any element of the acceptance test fails, the failure will be tracked via a HOSC Problem Report (HPR). Once the specific problem has been corrected and tested, the entire Acceptance Test will be repeated to verify that all test parameters are met and not compromised by the corrective action.

Upon successful completion and acceptance of the Acceptance Test, operations personnel will begin the CoFR process.

#### Documentation

The contractor shall provide the following documentation at the Design Review (DR):

- Updated Management Plan (reference DRD 1016MA-001)
- Updated Test, Verification and Validation Plan (reference DRD 1016VR-001)
- Updated Certification of Flight Readiness Plan (reference SSP 58318 International Space Station Program MSFC Payload Operations Certification Of Flight Readiness Implementation Plan, Generic)
- Architecture Control Document (reference MSFC-SPEC-3341 for format and content)
- Updated Joint Operations Procedure (reference HOSC-JOP-1691)
- Updated System Architecture Document (reference MSFC-DOC-2837)
- Updated SSCC to HOSC ICD (reference SSP 45001)

Initial or draft versions of items (d) through (h) will be acceptable at the DR, provided a schedule to baseline each item is defined.

#### Requirements

The BCC capability must meet the following operational requirements

Support non-critical ISS operations for 7 days.

Provide command capability to maintain vehicle and payload operations and protect the capability with the MCC-H shut down

For ISS, MCC-H will transition mission control responsibility to the BCC at least 36 hours prior to the forecast onset of 50-knot (58 mph) winds at JSC (Level 2 threat)

For Category 1 & 2 hurricanes, the MCC equipment will remain powered up and useable, but not monitored (system functionality is not guaranteed). A facility ride-out team will be available for fire watch only. An emergency power down and total evacuation will be executed for Category 3, 4, or 5 storms.

Provide required voice Instruments in Building 4663, room B204 for local users

Provide Internet Voice Distribution System (IVoDS) PC clients for remote Flight Controllers over Virtual Private Network (VPN) I/F

Provide JSC Flight Control team user accounts setup for POIC telemetry access

Provide POIC telemetry database build for an estimated 8463 core systems S-Band parameters.

Adapt JSC developers MSKWin display capability to access POIC services

Provide POIC PC telemetry display service (IspEPC) (currently available)

Provide 12 pre-configured PCs for MOD for checkout by critical flight control team members, plus CD available for loading additional computers

Provide full OCA capability at MSFC

Continuous voice with the crew

Ability to uplink files required to meet crew requirements and support on-orbit operations.

Provide IP Phone connectivity for the crew

Provide MOD tools (Flight Notes, OSTPV/IPV, BEV, IAM, etc)?

Provide facility space for the following MCC-H assets:

Command processor

EIS server

Telemetry Front End Processor

Encryption processor

MSFC will provide restricted access in Building 4663, room B204 for the BCC. This location will provide 1903 square feet of raised floor. An independent HVAC system supports the room. An UPS System with automatic diesel generator cut over already is installed to provide required levels of facility availability. The facility will enable placement and operation of 12 standard workstations. Standard and mission voice communications connectivity and equipment are in place. Additional essential support is provided, including printers, non-operations workstations, tables and chairs. A conference room, fax, copiers and other shared functions such as a break area are

available near the BCC room so console operators can perform their activities and take breaks without losing contact with the control room.

Section 508 is applicable to the following requirements anticipated for this acquisition: The contractor shall comply with all technical standards of 1194.21, 1194.23, 1194.25, 1194.26, 1194.31 and 1194.41 as outlined in url:

<https://www.section508.gov/index.cfm?FuseAction=Content&ID=12> with the following exceptions:

Monitor 17 inch HP 7540 -the contractor shall comply with all technical standards of 1194.21 with the exception of 1194.21(l), 1194.23(k1 through k3) with the exception of 1194.23(k4), 1194.26 with the exception of 1194.26(c), 1194.31, 1194.41 with the exception of 1194.41 (c)

HP Compaq Business Notebook NX9600, 1194.21, 1194.23 (k1 through k4), 1194.26, 1194.31 1194.41 with the exception of 1194.41(b)

HP Deskjet 6540 -1194.21 with the exception of 1194.21 (j) and (l), 1194.25 (a, g, and i only), 1194.31 with the exception of 1194.31(d), 1194.41

ProLiant ML370 -1194.21, 1194.23(k1 through k4), 1194.26 (a and d only), 1194.31, 1194.41 with the exception of 1194.41(c)

These exceptions have been determined to be commercially non available or not applicable, by their very nature they can not be made compliant and there is no other commercially available tool that would be totally compliant.

#### 4.8 Shuttle Project

The services described under this paragraph are specific to the Shuttle project. Paragraph 4.8.1 contains Shuttle specific requirements relative to the generic O&M functions described in PWS paragraphs 4.1 through 4.6. Paragraph 4.8.2 defines additional O&M tasks that the must be performed in support of the Shuttle project.

##### 4.8.1 Specific Mission Support

Per PWS paragraph 4.4, HOSC Mission Services, the contractor shall provide voice, video and data processing services in support of Shuttle test, simulation, pre-launch, launch and flight operations. The contractor shall provide on-site support during Level A Shuttle activities (Systems, Network, and MIDDs), and for special activities. The contractor shall coordinate system activities with other MIDDs nodes, Johnson Space Center (JSC) and Cape Canaveral Air Force Station (CCAFS), and the MSFC MIDDs user community.

The contractor shall provide on-call support for non-Level A Shuttle activities.

Per PWS paragraph 4.4, HOSC Mission Services, the contractor shall provide telemetry controller/operations coordination in accordance with MSFC-PROC-1613, Joint Operations Procedures for the Kennedy Marshall Transmission System. The contractor

shall provide for inter-center communication coordination for test, simulation, pre-launch, launch and flight operations.

Per PWS paragraph 4.4.4, Data Storage, the contractor shall create a best-source merge of telemetry data from real-time, playback and dump sources. The contractor shall archive raw and processed telemetry data and create data reduction products as required. The contractor shall provide support including loading of data, verification of historical data, checkout, maintenance and processing of data.

#### 4.8.2 Certification of Flight Readiness (CoFR)

The contractor shall report mission and systems validation, verification and Certification of Flight Readiness (CoFR) in accordance with paragraph 4.3 of FPD-0I-FD40.4, Flight Certification for Ground Systems. The contractor shall certify systems and personnel where required.

#### 4.9 Chandra X-Ray Observatory

The services described under this paragraph are specific to the Chandra project. Paragraph 4.9.1 contains Chandra specific requirements relative to the generic O&M

functions described in PWS paragraphs 4.1 through 4.6. There are no additional unique O&M tasks to be performed in support of the Chandra project.

##### 4.9.1 Specific Mission Support

Per PWS paragraph 4.4.1, Voice Systems, and PWS paragraph 4.4.5, System Administration and Management, the contractor shall provide voice and network services in support of ongoing Chandra operations.